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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,227	07/10/2003	Kazuhiko Nagano	Q76484	2250

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SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER	
VAN ROY, TOD THOMAS	
ART UNIT	PAPER NUMBER
2828	

NOTIFICATION DATE	DELIVERY MODE
01/22/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

sughrue@sughrue.com
PPROCESSING@SUGHRUE.COM
USPTO@SUGHRUE.COM

Office Action Summary	Application No.	Applicant(s)	
	10/616,227	NAGANO ET AL.	
	Examiner	Art Unit	
	TOD T. VAN ROY	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) *4,5,11 and 15-26* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,14,27-29 and 612* is/are rejected.

7)☒ Claim(s) *7-10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 01/05/2010 has been entered.

Response to Amendment

The Examiner acknowledges the amending of claims 1 and 12-13.

Response to Arguments

Applicant's arguments with respect to claims 1, 12, and 13 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 6, 12-13, and 27-29 rejected under 35 U.S.C. 103(a) as being unpatentable over Heidel et al. (US 5212707) in view of Yamashita (JP 06-196816, Applicant submitted prior art).

With respect to claim 1, Heidel teaches a laser apparatus comprising: a block (fig.1 #12), a plurality of laser diodes respectively having light emission points and being fixed to said block so that the light emission points are aligned along a direction (fig.1 #10), a collimator lens array integrally formed to contain a plurality of collimator lenses which are arranged along a direction and respectively collimate laser beams emitted from said plurality of laser diodes (fig.1 #22+24), wherein said block has a lens setting surface which is flat (fig.1 #12, flat edges on interior of protrusions), parallel to optical axes of said plurality of laser diodes (extending parallel in front of the array), and located on a forward side of said plurality of laser diodes at a predetermined distance greater than zero along said optical axes from said light emission points, and said collimator lens array is fixed to said block so that an area of an end surface of said collimator lens array is in contact with an area of said lens setting surface (fig.1, an end surface of the lens array contacts the setting surface) at only outer sides of said block with respect to a widthwise direction of said block. Heidel does not teach the lens setting surface to be perpendicular to the optical axis and the lens array to overlap the perpendicular surface. Yamashita teaches a similar lens and array system wherein a

lens array is mounted on a lens setting surface (fig.7 #6/9) which is perpendicular to the axis direction and the lens array overlaps the surface. It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the block shape/system of Heidel with the perpendicular (and overlapping) lens mounting style of Yamashita as a matter of engineering design choice allowing for the organization of the components to best fit the given space, as well as to allow for space for left/right alignment of the lenses with the lasers.

With respect to claim 6, Heidel further teaches the diode lasers to be single cavity and have a single light emission point (abs., wherein the emission regions are said to be separate for each device, fig.2 and are of a single cavity).

With respect to claims 12 and 27-29, Heidel and Yamashita teach the laser apparatus outlined above, but Heidel does not teach adjusting a position of each of said plurality of laser diodes in a direction parallel to said optical axes based on information obtained by measurement of a focal length of one of the plurality of collimator lenses corresponding to each of said plurality of laser diodes, and fixing each of the plurality of laser diodes at the adjusted position, or adjusting positions of the lens along a planar surface the reference surface. It would have been obvious to one of ordinary skill in the art at the time of the invention to adjust the distance of the light source away from the lens based on the focal length as this will maximize the light captured and transmitted by the lens, as is well known and widely practiced in all optical fields, and additionally to adjust in the perpendicular direction in order to properly align with the diffraction lens elements (fig.8 #119).

Claim 13 is rejected for the same reasons as given in the rejection to claim 1, as well as claim 12.

Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heidel and Yamashita in view of Chiappetta et al. (US 6724791).

With respect to claims 2 and 3, Heidel and Yamashita teach the laser apparatus as outlined in the rejection to claim 1, but do not teach the flatness of the block on which the diodes and lenses are fixed to have a flatness not greater than 0.5 um. Chiappetta teaches a laser apparatus wherein it is taught that heat transfer is maximized when the largest amount of surface area of the object and heat sink are in contact, namely when they are both flat (col.7 lines 9-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser apparatus of Heidel and Yamashita with the flat contact area as taught by Chiappetta, to maximize heat transfer to the heat sink for both the lenses and the diodes, and additionally to make the flatness not greater than 0.5 um as it has been found to be within the general skill of a worker in the art to discover the optimum or workable ranges through routine experimentation (i.e. optimizing the degree of flatness, as having been taught by Chiappetta; see MPEP 2144.05 II A - In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heidel and Yamashita in view of Andrews (US 5640188), and further in view of Kuniyasu et al. (US 2002/0018499).

With respect to claim 14, Heidel and Yamashita teach the laser apparatus as outlined in the rejection to claim 13, including the diodes to be aligned and the block to be a heat dissipation block, but do not teach the diodes to be mounted junction side down on submounts. Andrews '188 teaches a plurality of semiconductor lasers mounted on a plurality of submounts (fig.4 #'s 86). Kuniyasu further teaches the use of GaN based diode lasers ([0008]) to be flip chip mounted (fig.28, heat sink attached at top surface). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the laser light source of Heidel and Yamashita with the submounts of Andrews '188 to provide heat dissipation (col.6 line 6) and reduce thermal cross talk between adjacent devices (col.7 lines 3-4), as well as the mounting techniques of Kuniyasu to remove excess heat from the active region ([0220]).

Allowable Subject Matter

Claims 7-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TOD T. VAN ROY whose telephone number is (571)272-8447. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Minsun Harvey can be reached on (571)272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tod T Van Roy/
Examiner, Art Unit 2828